

Remarks

In the Final Office Action, the Examiner rejected claims 1-29 based on the same prior art previously presented, but clarified certain aspects of the rejections. In this response, Applicants respectfully traverse the rejections and resubmit the previous arguments in the Response to Office Action submitted September 2, 2005, which are hereby incorporated by reference. Further, Applicants address specific assertions made by the Examiner in the Final Office Action. Accordingly, in view of arguments presented, Applicants respectfully request reconsideration of the pending claims 1-29.

In the Final Office Action, the Examiner admitted that a velocity model is not a frequency passband model. *See* Final Office Action mailed November 28, 2005, page 4. However, the Examiner appears to assert that the velocity model and a frequency passband model are equivalent under M.P.E.P. § 2183. *See id.* at pages 4-6. In addition, the Examiner stated that "velocity and frequency are mathematically related and proportional quantities over a given distance." *See id.* Also, the Examiner stated that "the distinction among model formed by velocity or frequency is not patentably different." *See id.* These assertions and the Examiner's reliance on M.P.E.P. § 2183 appear to the Examiner's basis for the rejections of the claims.

Applicants respectfully traverse these rejections for the reasons provided below in addition to the reasons provided in the previous response. First, Applicants submit that a velocity model is not equivalent to a frequency passband model and that the Examiner has not established a *prima facie* case of equivalence for the at least the reasons provided below. Second, Applicants respectfully submit that Etgen teaches away from the Examiner's proposed construction and the claimed subject matter. Finally, Applicants respectfully submit that the Examiner appears to rely upon hindsight reconstruction to reject the claims.

With regard to the first point, M.P.E.P. § 2183 states that the following rational may be relied upon to establish equivalence:

- (A) performs the function specified in the claim,
- (B) is not excluded by any explicit definition provided in the specification for an equivalent, and
- (C) is an equivalent of the means- (or step-) plus-function limitation.

These factors must be presented by the Examiner to establish a *prima facie* case of equivalence. However, Applicants respectfully assert that the Examiner has failed to establish a *prima facie* case of equivalence.

To begin, a velocity model does not perform the same function as the claimed frequency passband model. First, it should be noted that a frequency passband model is not a model of frequency; rather, it is a model of some property of the subsurface that is limited in frequency bandwidth. In contrast, a velocity model is a model of velocity. As such, one cannot create a frequency passband model of a property, such as porosity, by multiplying a velocity volume by cycles/meter. Also, the process of assigning properties to each frequency passband model is not the same process as filtering a property (velocity) model into single-frequency slices. In support, Applicants submit herewith a § 1.132 affidavit of a person skilled in the reservoir modeling art (co-inventor Craig S. Calvert) to contradict the Examiner's unsupported assertion that a velocity model is equivalent to a frequency passband model. As such, a velocity model is not equivalent to a frequency passband model and does not perform the same functions as a velocity model.

In addition, the Etgen reference clearly differentiates between a frequency model and a velocity model. In Etgen, a 3-D velocity model is described as a specification of the subsurface velocity structure as a function of depth for subsurface points located in the vicinity of the survey, which is written as a convolution of a migration operator with the seismic data. *See id.* at col. 3, lines 56-61; col. 5, lines 41-50. The velocity model is then seismically migrated, which is a computationally intensive process. *See id.* at col. 4, lines 47-62. Accordingly, various steps are performed in Etgen to convert a velocity model into various frequency slices that are combined into a single composite volume. *See* col. 5, line 40 to col. 7, line 48. Clearly, the Etgen reference differentiates between a velocity model and frequency model. As such, a velocity model does not perform the same function as the claimed "frequency-passband model."

Further, the present claims do not include means- (or step-) plus-function limitations. Under M.P.E.P. § 2181, claim limitations fall under 35 U.S.C. 112, sixth paragraph, when the means for or step for language is specifically stated in the claim. The present independent claims do not include "means for" or "step for" limitations. As such, the Examiner's basis for equivalence also appears to be deficient because the present claims do not include claim limitations under 35 U.S.C. 112, sixth paragraph.

With regard to the second point, the Examiner's construction appears to change the principle of operation of Etgen and thus teaches away from the claimed subject matter. It should be noted that a *prima facie* case of obviousness may also be rebutted by showing that

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the art, in any material respect, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 U.S.P.Q.2d 1362, 1366 (Fed. Cir. 1997). In fact, teaching away from the art is a *per se* demonstration of lack of *prima facie* obviousness. *In re Dow Chemical Co.*, 837 F.2d 469, 5 U.S.P.Q.2d 1529 (Fed. Cir. 1988). In particular, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (C.C.P.A. 1959); see M.P.E.P. § 2143.01.

As noted above, the Etgen reference clearly differentiates between a frequency model and a velocity model. In Etgen, the velocity model undergoes various computationally intensive processes to form the single composite volume. *See id.* at col. 4, lines 47-62; col. 5, line 40 to col. 7, line 48. As a result, the Examiners proposed modification changes the principle of operation of Etgen by attempting to replace a velocity model utilized as the starting point of the Etgen process with a single composite volume in frequency, which is created from the velocity model through various operations. Accordingly, the Examiner's proposed modification changes the principle of operation of Etgen and teaches away from the claimed subject matter.

With regard to the third point, the Examiner appears to have relied upon hindsight reconstruction to reject the claimed subject matter. It should be noted that one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). In the rejections of the claims, the Examiner relied upon equivalence because the references do not suggest or teach the claimed subject matter. Clearly, the Examiner is relying on the present application as the basis for combining these references along with the Examiner's assertions of equivalence to reject the claimed subject matter. As such, the Examiner is impermissibly relying on the relying knowledge learned from the present application to selecting the combination.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully requests withdrawal of the Examiner's rejections and allowance of claims 1-29. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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Date


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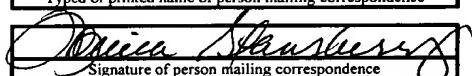
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January 27, 2006

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